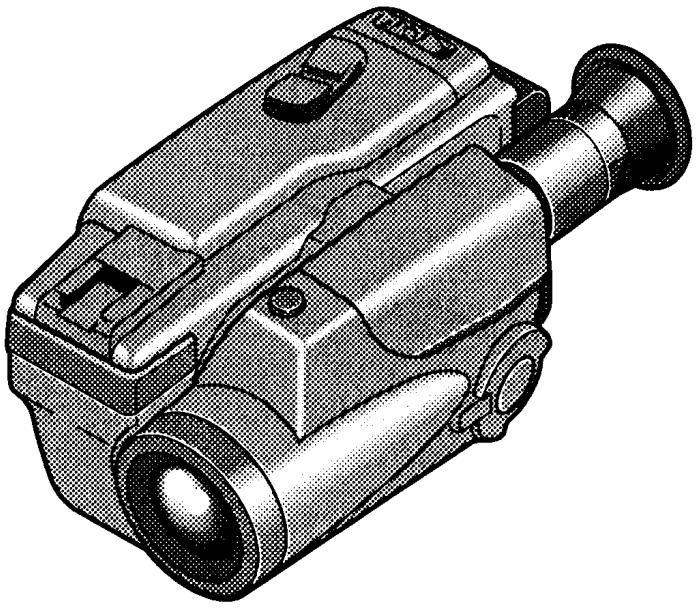
SANYO

INSTRUCTION MANUAL

8 mm Camcorder

VM-EX280P



8 PAL

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Please read these instructions carefully before using the unit.
Be sure to keep this manual for later reference.

The camcorder can be powered with a charged battery pack or by connecting the AC adaptor/charger.

Safety guards

■ **England (BEAB) only**

THIS PLUG IS NOT WATERPROOF-KEEP DRY

This cord is already fitted with a moulded plug incorporating a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA approved BS 1362 fuse must be used of the same rating, marked thus ASTA.

If the fuse cover is detachable, never use the plug with the cover omitted. If a replacement fuse cover is required ensure, it is of the same colour as that visible on the pin face of the plug (ie red or orange). Fuse covers are available from the Parts Department indicated in your User Instructions.

If the plug supplied is not suitable for your socket outlet, it should be cut off and destroyed. The end of the flexible cord should be suitably prepared and the correct plug fitted.

WARNING: A PLUG WITH BARED FLEXIBLE CORDS IS HAZARDOUS IF ENGAGED IN A LIVE SOCKET OUTLET.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue : Neutral
Brown : Live

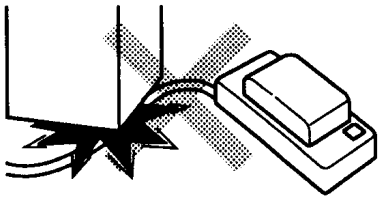
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal in the plug which is marked with the letter N or coloured Blue or Black. The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

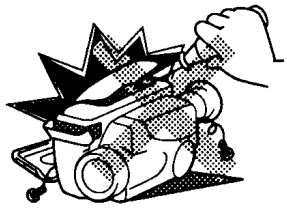
WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL ⏚ OR COLOURED GREEN OR GREEN/YELLOW.

Precautions

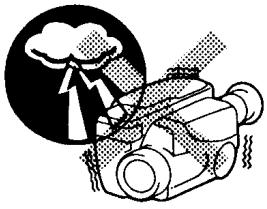
- Do not put any furniture or other heavy object on the power cord, as that may cause a short circuit and start a fire.



- Keep the power cord away from heat sources such as a heater, stove, etc.
- To unplug the power cord, pull from the plug, never the cord.
- Do not open the camcorder case.
  There are no user serviceable parts inside.
  Opening the case may damage the camcorder.



- When the cassette compartment is opened, make sure no foreign object falls inside the camcorder, as that may cause damage to the camcorder and/or start a fire when the camcorder is used.
- Keep the camcorder away from children, and make sure they do not put their hand in the cassette compartment.
- Do not use the camcorder outside during a storm or when there is lightning.

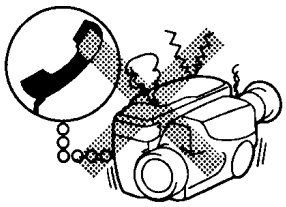


- **Do not use commercially available wet-type video head-cleaning cassettes.**

They may damage the video heads in your unit. For the most suitable head-cleaning cassettes, please consult the dealer where the unit was purchased.

- Do not wrap the camcorder in a cloth, as the temperature inside will rise and damage the unit.

If you notice anything unusual (smoke, strange noise or odour, etc.), stop using the unit and switch it off immediately. Remove the battery pack or disconnect the DC connecting cord, then consult the dealer where the unit was purchased, or contact an authorized service centre.

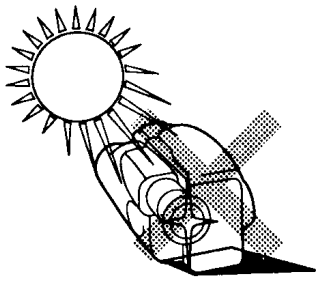


Precautions concerning magnetic fields

Do not leave/use the camcorder near magnets, or magnetic fields as they may damage the recordings on the tape.

Precautions during recording or playback

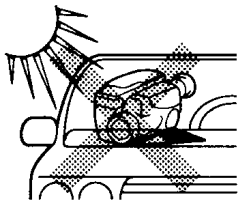
- Do not let direct sunlight hit the lens, as that may cause damage to the unit.

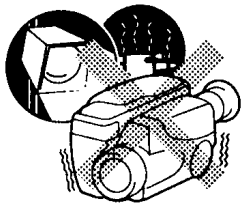


- Do not use the camcorder to near transmitting antennas, as this might cause the unit to malfunction.
- When using the camcorder at the beach, do not let it get wet.
- Do not allow sand or dirt to enter the unit.

Do not store the unit in the following locations:

- where it will be subject to direct sunlight (e.g. on a car dashboard, etc.),
- near bright light sources, or where the humidity level is high,



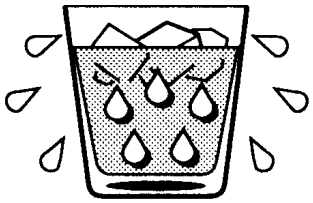


- in a closed car on warm or hot days, or close to a heat source (e.g. heater, stove, etc.),
- in the presence of excessive dirt or dust,
- where it will be subject to strong vibrations, or strong magnetic fields.

Condensation

Condensation is the moisture that forms on the outside of a glass when you fill it with cold water.

The first sign of condensation is fogging of the camcorder lens and viewfinder.

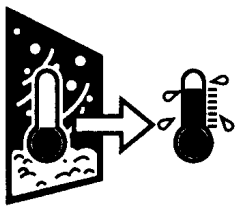


To stop the formation of condensation, wrap the camcorder in a cloth until the fogging on the lens and in the viewfinder disappears.

Do not use the camcorder before condensation has disappeared as that may cause damage to the video heads.

Conditions where condensation might appear

- If the camcorder is suddenly moved from a cold place to a warm, humid one, or vice versa.



- If a heater has been turned on to quickly heat the room, or if the level of humidity is high.
- If taken from an air conditioned room, or car to a hot, humid place.

Condensation warning indicator

If condensation is detected inside the camcorder, the condensation warning indicator will flash in the viewfinder. (See page **6**.)

- As condensation may also appear inside the cassette casing, the cassette warning indicator might also flash when the cassette is loaded. Do not load a cassette in the camcorder if you suspect that condensation has formed inside the cassette.

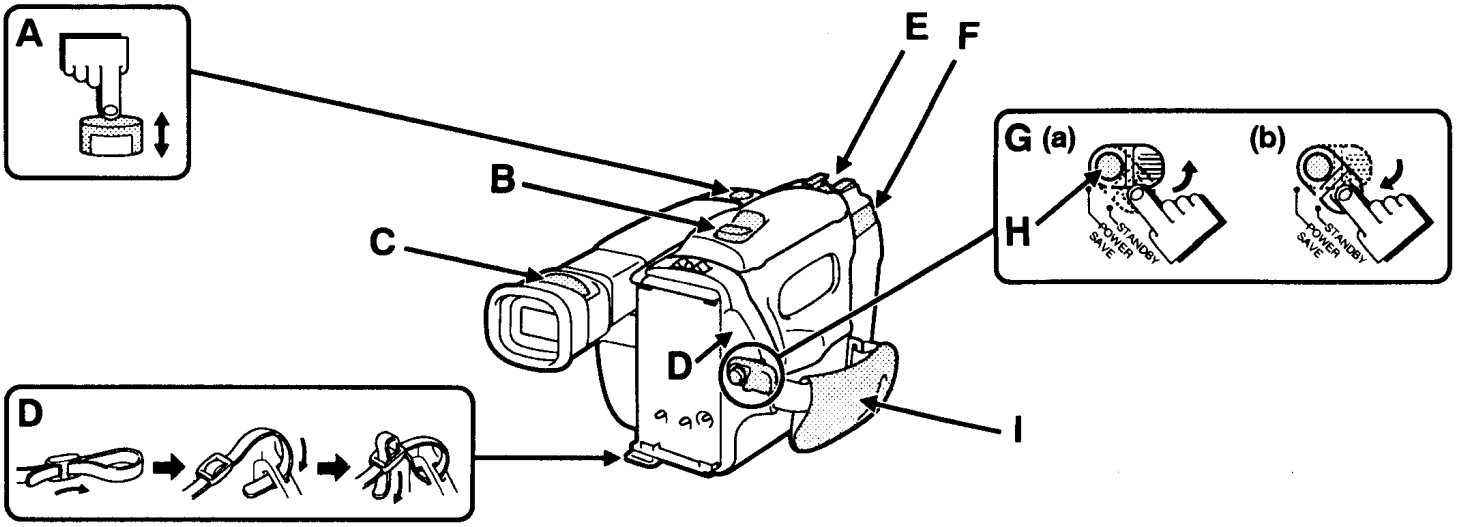
If condensation has formed

Eject the cassette and wait for 1 – 2 hours for the condensation to dry.
The time required to completely eliminate condensation may vary.

WARNING:
UNAUTHORIZED RECORDING OR USE OF TELEVISION PROGRAMMING, BROADCASTS, VIDEO TAPE, FILM OR OTHER COPYRIGHTED MATERIAL MAY VIOLATE APPLICABLE COPYRIGHT LAWS. **SANYO** ASSUMES NO RESPONSIBILITY FOR UNAUTHORIZED DUPLICATION, USE OR OTHER ACTS WHICH INFRINGE UPON THE RIGHTS OF COPYRIGHT OWNERS.

This apparatus complies with EC Directives 89/336/EEC, 92/31/EEC and 93/68/EEC.

About the camcorder



A. Remote control sensor

Press to expose it, it can then be turned 360° to face the remote control location.

The remote control can be used within a range of 4 m (13 ft) from the front of the sensor window on the camcorder.

B. Power zoom button (x10)

Press the "**T**" side of power zoom button for a close-up shot and the "**W**" side for a wide-angle shot.

- When the **POWER** switch is set to "**OFF**", the zoom will automatically return to the zoom-out position.

C. Eyesight compensation ring

Turn the camcorder on, then while looking into the viewfinder turn the ring, to the right or to the left, to obtain the clearest possible picture.

D. Shoulder belt hook

Install the shoulder belt as illustrated.

E. Accessory shoe

F. Microphone (Stereo)

G. Stand-by switch

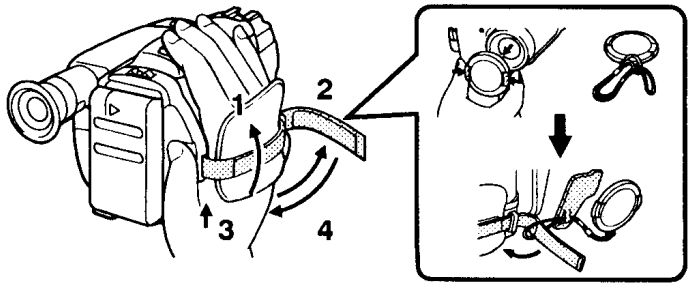
When the **POWER** switch is set to "**CAMERA**", the stand-by switch is used as follows:

(a) For recording; press the **REC START/STOP** (**H**) button to start recording or to go into recording pause mode. (**STANDBY**)

(b) When not recording momentarily; the power to the viewfinder is cut in order to save the battery pack charge. (**POWER SAVE**)

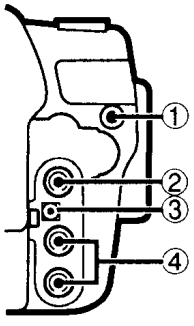
I. Grip belt

Use the grip belt to hold the camcorder.

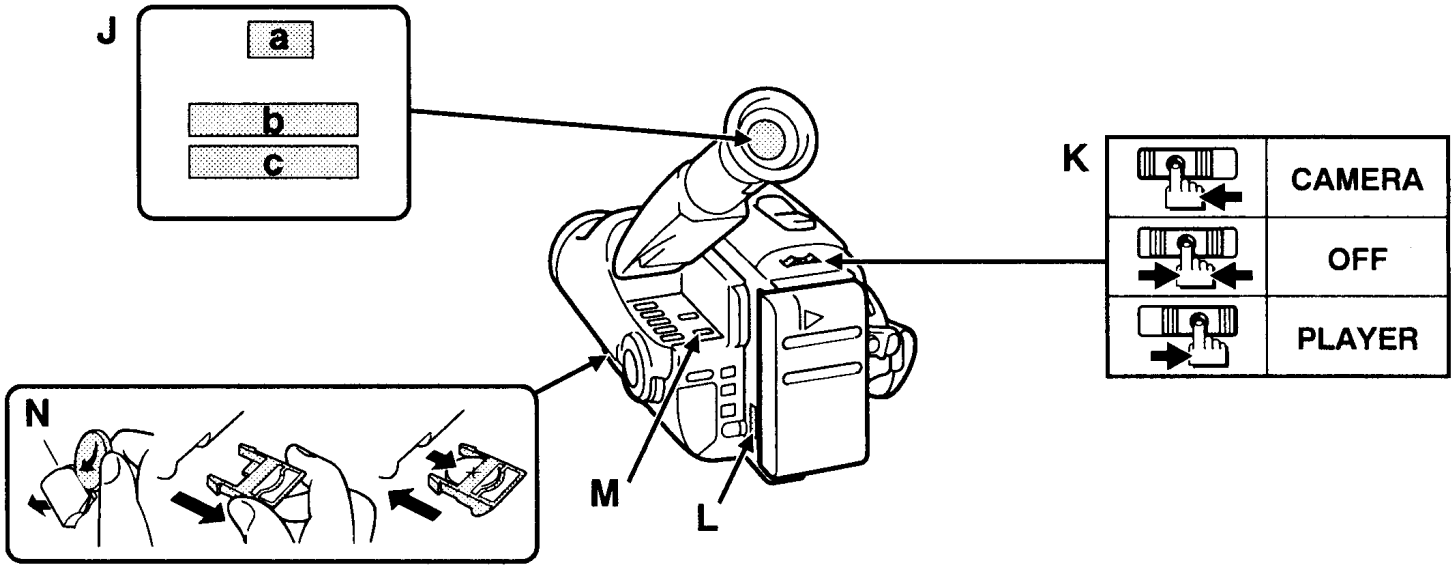


■ Tripod screw mount

Located under the unit.



① External microphone jack (**MIC**)
② Video output terminal (**VIDEO**)
③ DC output terminal (for RF converter)
④ Audio output terminal (**AUDIO**)



J. Viewfinder

Warning indicators (blinking)

: The battery power is running out and the power will soon turn off. (**a**)

TAPE : The tape is within about 5 minutes from the end. (**c**)

TAPE END : The tape has reached the end. (**c**)

: The erasure-prevention switch on the cassette is set to the red position (**b**). (See page **8**.)

: No cassette is loaded. (**b**)

: Condensation has formed inside the unit or the cassette. (**b**)

: Condensation has formed inside the unit or the cassette. (**c**)

K. Power switch

Set the **POWER** switch while holding down the small button in the centre of the switch.

L. Battery release button (BATT)

M. Cassette eject button (EJECT)

N. Lithium battery tray

Insert the lithium battery in the tray with the (+) sign facing up.

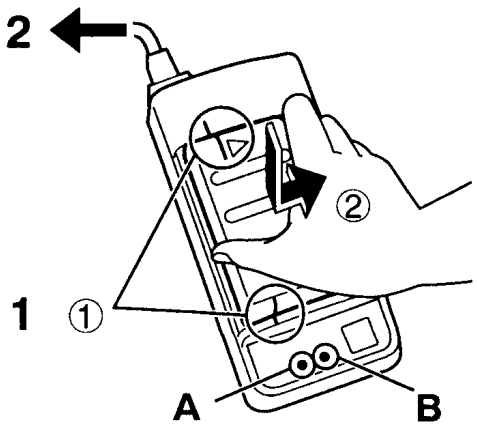
After the lithium battery is installed, the time and date will need to be set. (See page **12**.)

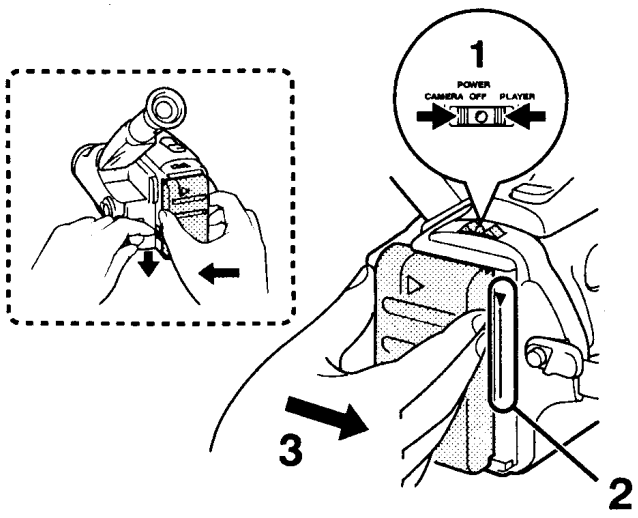
Battery pack remaining power indicator

The remaining charge in the battery pack is displayed in the viewfinder.

When the remaining charge is low ( ) it is recommended to have a spare recharged battery pack ready.

Recording steps





1 Charging the battery pack

The supplied battery pack has not been charged. Make sure to charge it before using it on the camcorder for the first time.

1 Align the marks on the battery pack with the ones on the AC adaptor/charger (①). When pressing it down, slide it in the direction of the arrow until it clicks into place (②).

2 Plug the AC adaptor/charger power cord into an AC outlet.
- The **POWER** indicator (**A**) and the **CHARGE** indicator (**B**) light.

3 When it is fully charged, the **CHARGE** indicator will go off.

Remove the battery pack in the reverse order of installation.

Notes

- When finished, make sure to unplug the AC adaptor/charger power cord from the AC outlet.
- If the **CHARGE** indicator flashes rapidly, remove the battery pack immediately, then try again making sure the battery pack is correctly installed. If the **CHARGE** indicator still flashes rapidly, it may indicate that the battery pack cannot be used. Please consult your dealer for assistance.

2 Installing the battery pack

1 Set the **POWER** switch to "**OFF**".

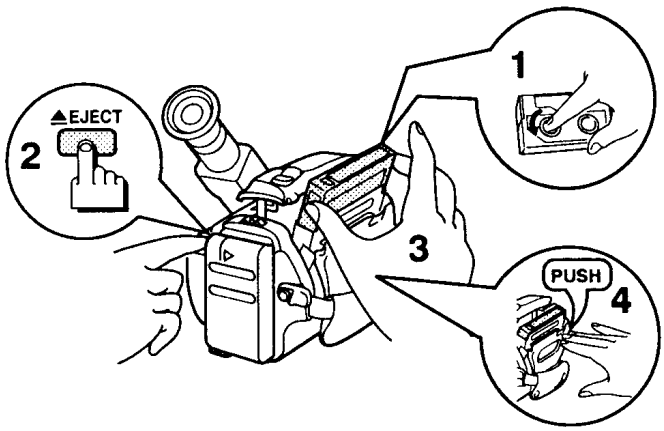
2 Align the right side of the battery pack with the line on the camcorder.

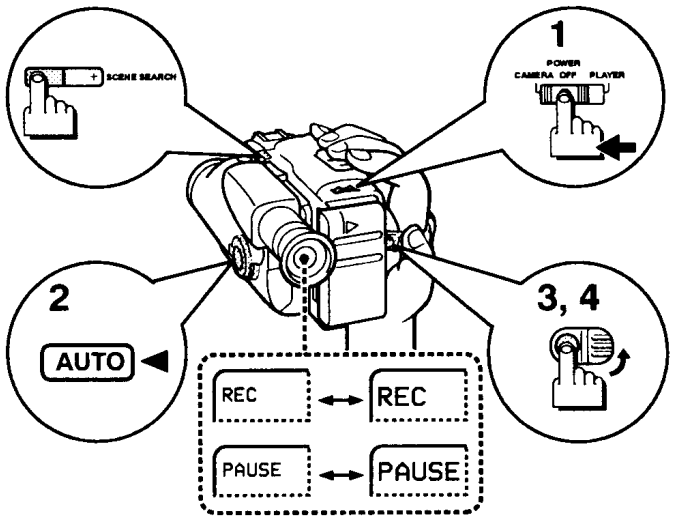
3 While pressing it down, slide the battery pack toward the right until a click is heard.

To remove the battery pack, push and hold down the BATT button, then slide the battery pack in the opposite direction of the arrow on the battery pack (▷).

Note

Do not use the AC adaptor/charger (VAR-S12) for any purpose other than charging the battery packs (NP-55, NP-65, NP-90 or NP-S88A), or supplying power to this camcorder.





3 Loading a cassette

1 **To eliminate loose tape inside the cassette, gently turn the left reel at the bottom of the cassette with a finger.**

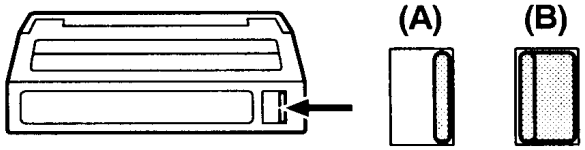
2 Press the **EJECT** button.

3 Insert the cassette fully, with the door toward the bottom and the window facing out.

4 Gently press on the **PUSH** indication on the cassette holder until it clicks into place.

To eject the cassette, press the EJECT button.

To prevent accidental recording on a tape with a previous recording you wish to keep, set the erasure-prevention switch to the red position (**B**).



4 Recording

1 Set the **POWER** switch to "**CAMERA**".

2 Set the preset mode selector to "**AUTO**". (See page **9**.)

3 Set the stand-by switch to "**STANDBY**".

4 Press the **REC START/STOP** button to start and stop recording.

Notes

- If a recording pause continues for more than 5 minutes, the power is cut to prevent the tape from being damaged.
- Vertical stripes may appear when recording in a dark place a light source such as a candle light, etc.
- For instructions on using the manual focus, please refer to page **11**.

Recording review

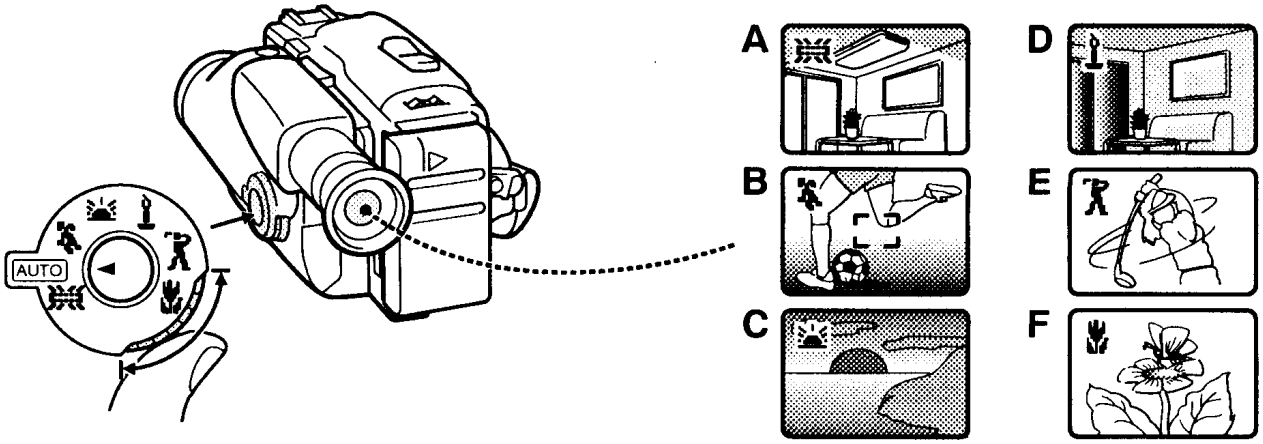
If the camcorder is in recording pause mode, press and release the **SCENE SEARCH** (–) button once to review, in the viewfinder, the last few seconds of the recording.

Then, the camcorder will automatically return to recording pause mode at the exact point where it previously was.

Note

Do not hold the **SCENE SEARCH** (–) button as the camcorder will go into scene search mode.

Camcorder operation



Preset mode

By turning the preset mode selector, you can set one of the preset modes by aligning the arrow with the desired mode indicator.

Please refer to page **20** for the preset modes specifications.

A Flickerless mode

This may be useful when recording under fluorescent lamps in a foreign country where the current is 60 Hz.

B Sports mode

When using this mode, the main subject should be kept in the frame area at the centre of the viewfinder for the focus to function properly.

Colours may change if this mode is used indoors under fluorescent lighting.

C Twilight mode

D Low Light mode

Brighter pictures will be recorded but the picture quality will be coarser.

E Auto High Speed Shutter mode

Colours may change if this mode is used indoors under fluorescent lighting.

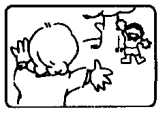
F Close-up mode

The zoom will be automatically set to full wide-angle position.

Note

When a preset mode is set or changed, the focus is automatically reset to auto focus mode.

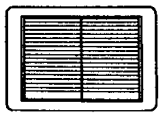
In the following recording conditions the focus may not adjust properly. It is recommended to switch to manual focus to get a focused picture. (See page 11.)



When recording two subjects, one nearby and one distant.

When recording through a dirty or wet window.

When recording subject without contrast (a white wall, etc.).

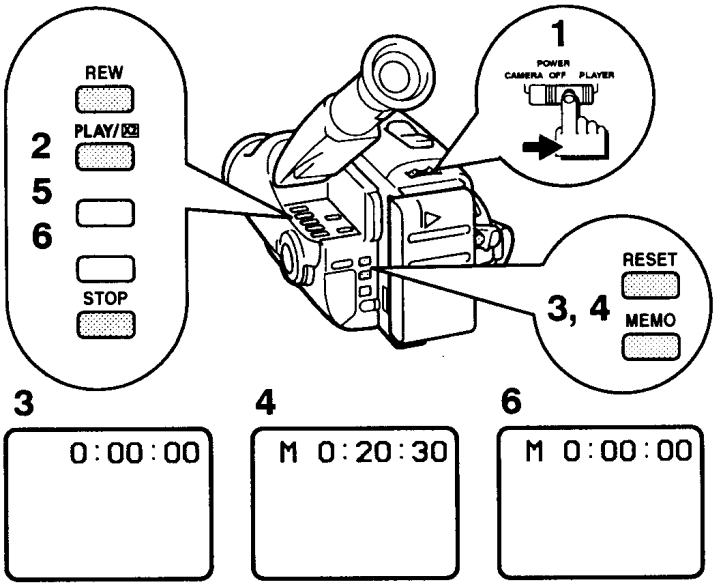


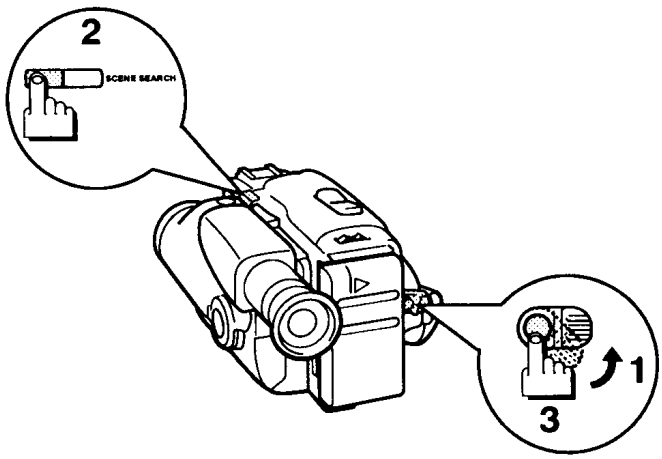
When recording an horizontally stripped subject.

When recording very bright subjects.

Note

When zooming in to record a distant subject, at close-range, the auto focus might not function properly due to the instability of the picture. In that case, use a tripod for stable focused pictures.





Linear time counter

The linear time counter indicates the tape run time in hours, minutes and seconds.

■ Using the memory function

1 Set the **POWER** switch to "**PLAYER**".

2 Press the **PLAY/⊠2** button.

3 Press the **COUNTER RESET** button.
- If you reset the counter at the beginning of the tape, you can determine the recording duration.

4 Press the **COUNTER MEMO** button.
- When "**M**" is displayed, the "**0:00:00**" point is memorized (not the point where the **COUNTER MEMO** button was pressed). Press the **COUNTER MEMO** button again to erase the "**M**" and cancel the memory function.

5 Press the **STOP** button.

6 Press the **REW** button.
- The tape will be rewound and will automatically stop at the counter reading "**0:00:00**".

Notes

- When pressing the **REW** button, the tape might not stop at the exact "**0:00:00**" location.
- If the tape is rewound past "**0:00:00**", the counter reading will indicate a negative "**–**" value.

Transition recording

If at the end of a recording, some unwanted pictures and sound have been recorded, they can be eliminated by replacing them with newly recorded pictures and sound.

Example: To replace unwanted pictures (**A**) by new pictures (**B**).

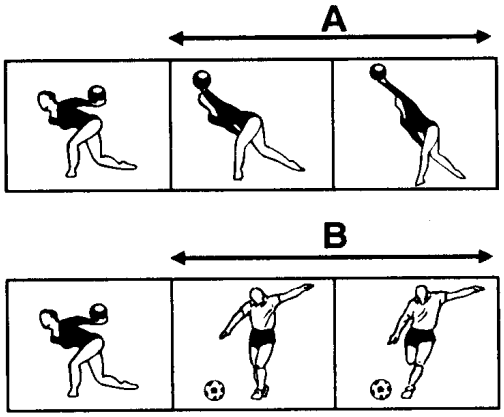
1 Set the camcorder to recording pause mode.

2 Press and hold the **SCENE SEARCH** (–) button until the beginning of the unwanted pictures.

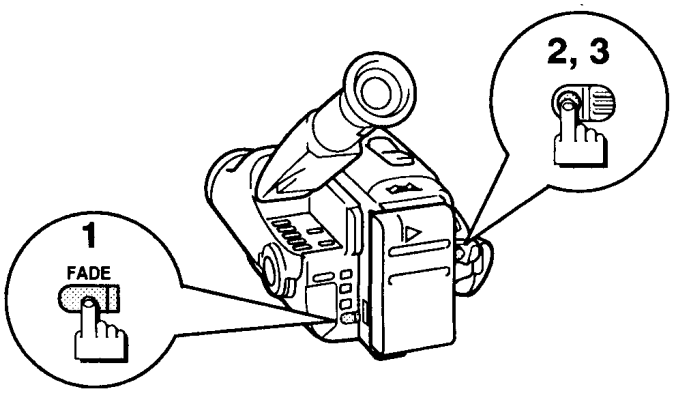
3 Press the **REC START/STOP** button to start recording the new pictures.

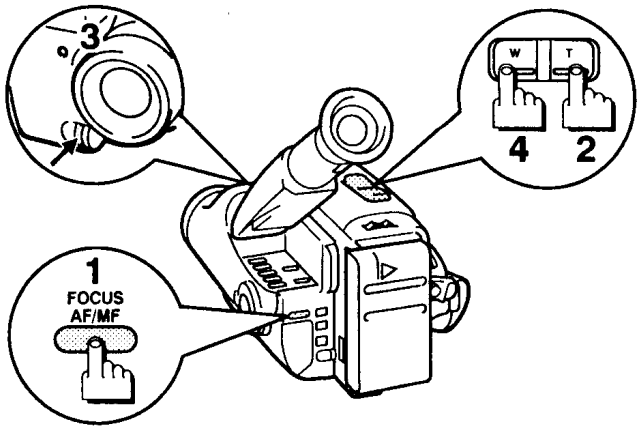
Note

At playback, during scene search operations, white bars will appear at that position.



Camcorder operation





Fade-in, Fade-out

The fade-in **(A)** will bring the picture and sound gradually. Fade-out **(B)** will do the reverse, gradually erasing the picture and sound (**Fig. 1**).

1 For example, after recording a title, set the camcorder to recording pause mode, then press the **FADE** button.
- "**FADE**" is displayed in the viewfinder.

2 Press the **REC START/STOP** button.
- The picture and sound will gradually fade in from a white background.
  "**FADE**" flashes: Fade-in
  "**FADE**" lights: End of fade-in

Note

Do not press the **REC START/STOP** button while "**FADE**" is flashing in the viewfinder, as that will cancel the fade-in function.

3 Press the **REC START/STOP** button again.
- The picture and sound will gradually fade out to a white background, and the camcorder will go into recording pause mode and the fade function is cancelled.
  "**FADE**" flashes: Fade-out

Note

During recording, the fade-out function can be cancelled or turned on by pressing the **FADE** button.

Manual focus

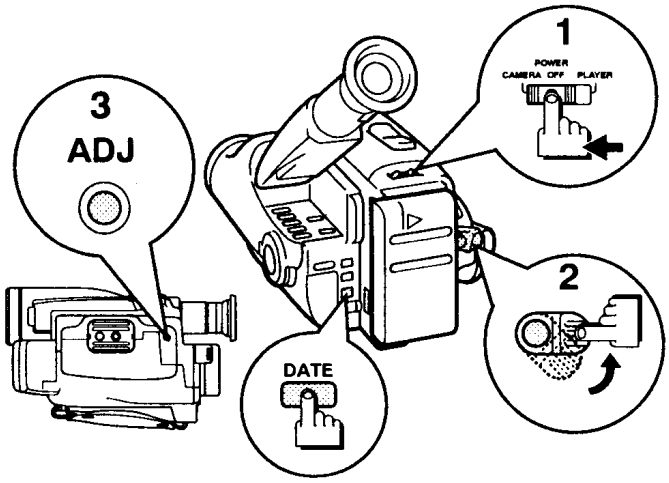
1 Press the **FOCUS AF/MF** button.
- "**MF**" is displayed in the viewfinder.

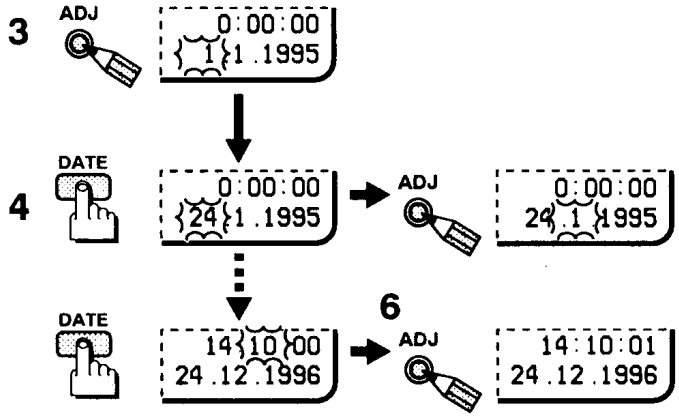
2 Press "**T**" of the power zoom button to zoom in on the subject.

3 Turn the manual focus dial to adjust the focus.
- If the focus is adjusted on a zoomed out picture, it may not be adjusted when changing to a zoomed in picture.

4 Press "**W**" of the power zoom button to select the desired recording field.

Fig. 1





Setting the date and time

Before setting the date and time, make sure the lithium battery is installed.

Example: Setting the date and time to 2:10 P.M., December 24, 1996.

1 Set the **POWER** switch to "**CAMERA**".

2 Set the stand-by switch to "**STANDBY**".

3 Press the **ADJ** button for about two seconds.
- The reset time (**0:00:00**) and date (**1. 1. 1995**) are displayed.

4 Press the **DATE** button until the desired day (**24**) is set, then press the **ADJ** button.

5 Repeat step **4** to set the month, year and time.

6 The seconds counter will start counting from "**00**" when the **ADJ** button is pressed after setting the minutes.

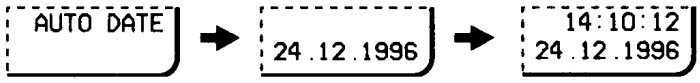
Notes

- The date and time are not displayed when the **POWER** switch is set to "**PLAYER**".
- The date and time cannot be set while in recording or playback mode.

■ Recording the date and time

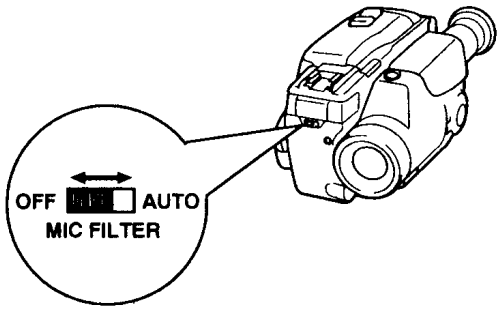
The date and time will be recorded on the tape as displayed in the viewfinder. The date and time will not be displayed if they have not been set.

Press the **DATE** button to select the desired display mode, as shown below.

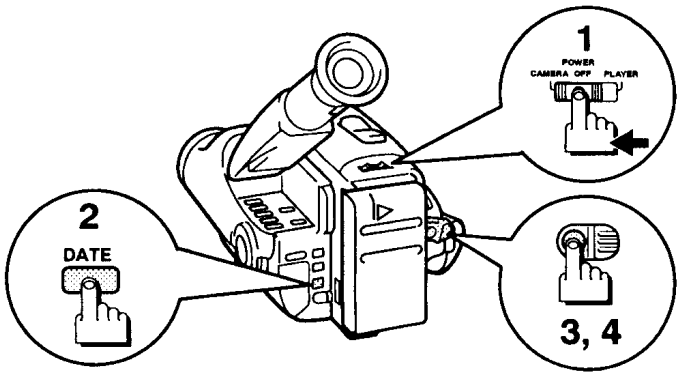


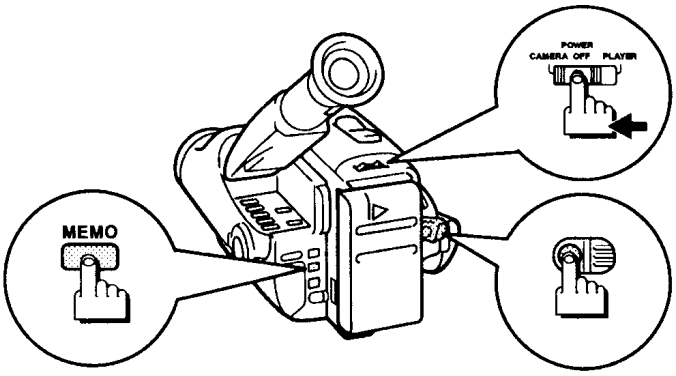
■ Using the MIC FILTER switch

When recording outdoors, if there is a howling sound caused by a strong wind, set the **MIC FILTER** switch to "**AUTO**" for reduced wind noise. Make sure to return the switch to "**OFF**" when recording under normal conditions.



Camcorder operation





■ Auto date function

When this function is set, the date will be inserted the first 15 seconds of the first recording of a day.

Before setting the auto date function, make sure to set the date and time correctly (see page **12**).

1 Set the camcorder to recording pause mode.

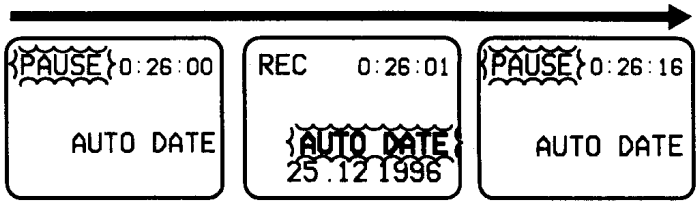
2 Press the **DATE** button untill the **AUTO DATE** indicator is displayed in the viewfinder.

3 Press the **REC START/STOP** button.
While the **AUTO DATE** indicator is flashing, the date is inserted.

4 Press the **REC START/STOP** button to stop recording.

To cancel the auto date function, press the DATE button to erase the AUTO DATE indicator from the viewfinder.

The auto date function will remain selected even if the **POWER** switch is set to "**OFF**".



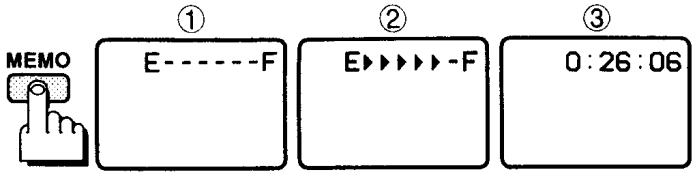
Remaining tape display

Set the camcorder to recording mode, then press the **COUNTER MEMO** button.

① The counter display changes to the remaining tape display.

② After approximately 20 seconds, the remaining tape is displayed. The ▸ symbol indicates tape remaining.

③ After approximately 10 seconds, the counter is displayed again.



■ To check the remaining tape

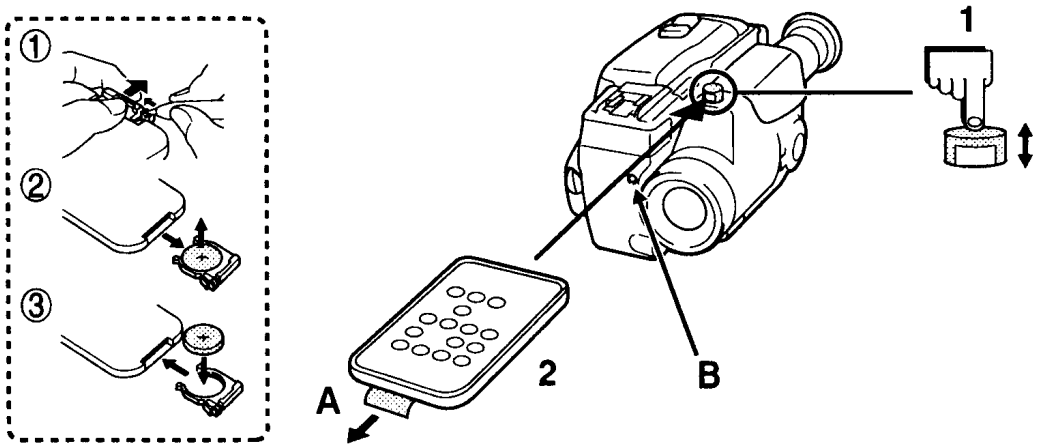
Press the **COUNTER MEMO** button. The remaining tape ② is displayed for a few seconds, then the display will automatically return to the counter display.

Note

In the following conditions, the remaining tape display will not appear.

- During recording pause mode.
- The **POWER** switch is set to "**OFF**" or "**PLAYER**".
- The tape is unloaded.

Using the remote control



The lithium battery has been installed in the remote control supplied with your camcorder (before using the remote control, pull-out the battery protector sheet A).

1 Press on the camcorder remote control sensor to expose it.

2 Direct the remote control toward the remote control sensor window, press the desired buttons to operate the camcorder.

During recording, the recording indicator (**B**) will light. It will flash during a recording pause.

Note

Remote control operation is not possible if:

- a strong light or sunlight is directed at the remote control sensor,
- there is an obstacle between the remote control unit and the camcorder,
- it is operated from the cassette holder side of the camcorder.

■ Replacing the lithium battery

① Using the tip of a pen, open the lithium battery tray at the back of the remote control.

② Pull out the tray and remove the old battery.

③ Place a new lithium battery in the tray with the (+) side facing up, then insert the battery tray fully into the remote control.

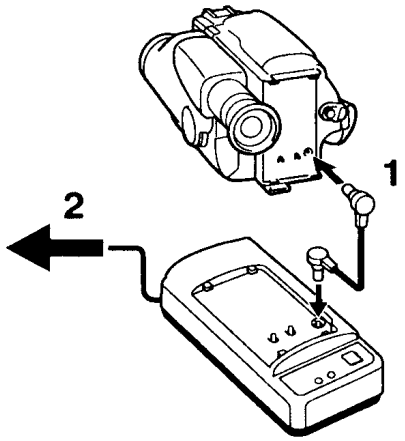
■ Lithium battery

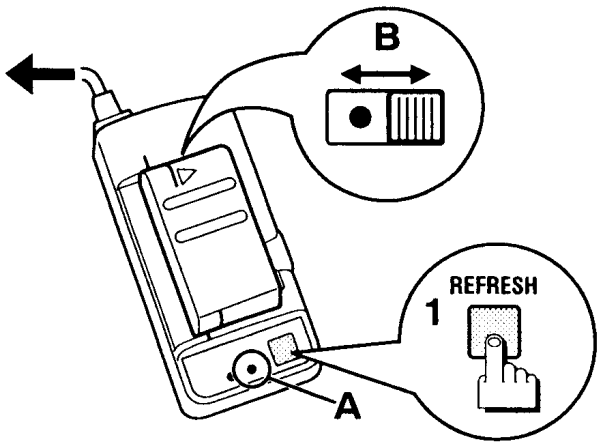
WARNING:

- The lithium battery must only be replaced with a lithium battery model number **SANYO** CR2025 [3 V]. Use of another lithium battery may present the risk of fire or explosion.
- Keep the batteries away from children.
- If a battery is swallowed, see a doctor immediately.
- Dispose of used lithium batteries promptly, in a safe manner that complies with all applicable laws.
- The lithium battery may present the risk of fire or chemical burn if mishandled.
- Do not recharge, disassemble, heat above 100°C (212°F) or dispose of in the fire.
- Before use, wipe the battery clean with a dry soft cloth to assure good contact.
- Never use metallic tweezers to hold the battery, and never short circuit the (+) and (–) sides of the battery.

Under normal conditions, the lithium battery should last about 1 year. If the lithium battery is expired "**88:88**" will flash in the viewfinder.

Power source





Using the DC connecting cord

1 Connect the DC connecting cord from the DC output terminal on the AC adaptor/charger to the DC input terminal on the camcorder.

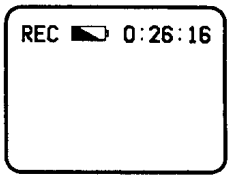
2 Plug the AC adaptor/charger power cord into an AC outlet.

The supplied AC adaptor/charger can be used in any country where the standard voltage is between 100 V and 240 V AC. In countries where a differently shaped plug is used, a plug adaptor must be used. (See your Sanyo dealer for details.)

For this product use the supplied AC adaptor/charger.
Use of another AC adaptor/charger may cause trouble.

Note

While using the AC adaptor/charger the battery pack power indicator may appear in the display, this does not indicate a problem with the AC adaptor/charger or the camcorder.



Refreshing the battery pack

1 Install the battery pack on the AC adaptor/charger, then press the **REFRESH** button.
- The **CHARGE** indicator (**A**) will flash (slow cycle), and the remaining charge of the battery pack will be discharged.

2 The **CHARGE** indicator will stop flashing and the battery pack will be charged automatically.

Charge condition indicator switch (B)

Use this switch as a reminder of the charge state of the battery. Set the switch to the RED position when the battery is discharged.

Battery packs

■ Recharging

The battery pack should only be recharged just before it will be used, or one day before at the most.

If the battery pack is recharged and not used, it will slowly loose its charge.

When recording, make sure to completely exhaust the charge of the battery pack.

If the battery pack is recharged when the previous charge is not completely exhausted, it may reduce the ability of the battery to be charged fully.

Charging the battery pack is possible within a temperature range of 10°C to 30°C (50°F to 86°F).

■ Battery pack charging/operating time

The charging and operating times shown in the table below are approximate.

Model	NP-55	NP-65*
Operating time	60 min.	80 min.
Charging time	60 min.	80 min.
Refresh time	210 min.	285 min.

* Sold separately

■ In the following cases the operating time of the battery pack will be shorter than normal, even after a full charge:

- If the battery pack is used for the first time.
- If used in low temperature conditions.
- If it is stored in a fully charged or partially charged condition.
- If the charge is completely exhausted and it is stored for a long period (more than 3 months).
- If stored at temperatures above 40°C (104°F).

The battery will be restored to its original condition after it has been used until completely discharged and recharged, or after it has been recharged using the Refresh function of the AC adaptor/charger two or three times.

The following operations also require power, and will shorten the operating time.
It is recommended that you have on hand enough charged battery packs to last 2 or 3 times the expected recording time:

- Recording pause mode.
- Loading and unloading the cassette.
- Using the power zoom.

■ Storing

Do not store a battery pack where it could reach high temperatures.

If the camcorder is not used for a long period, remove the battery pack. Otherwise, the battery pack will slowly loose its charge.

Note

CONTAIN NICKEL-CADMIUM BATTERY. MUST BE RECYCLED OR DISPOSED OF PROPERLY.

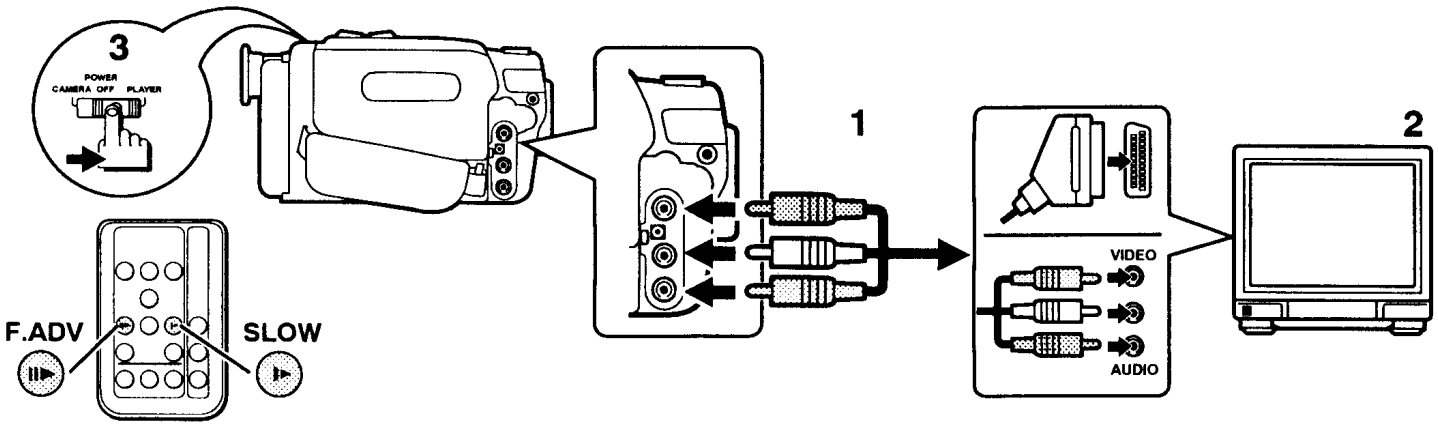
WARNING:

- Do not short-circuit the battery pack terminals, and never try to disassemble or modify the battery pack.
- Do not throw it into a fire, as it may explode.
- Do not get wet.
- When not in use, the battery pack should be removed and stored in a cool, dry place.
- Do not drop or subject it to violent shock.
- If the terminals are dirty, use a soft cloth or tissue paper to clean them.

■ Ni-MH battery pack

This AC adaptor/charger can also be used to charge Ni-MH battery packs (model NP-S88A, sold separately). For more details, please consult the dealer where the unit was purchased.

Playback



Connections

1 Connect the camcorder to the TV as indicated in the illustration.

2 When connected, make sure to set the **TV/VCR** switch on the TV to "**VCR**".

3 Set the **POWER** switch to "**PLAYER**".

■ Picture search

During tape playback, press and hold the **REW** or **FF** button to view the picture at high speed.

Release the **REW** or **FF** button to resume normal playback.

■ Still picture

During playback, press the **STILL** button.

To resume normal playback press the **STILL** or **PLAY/▯2** button.

■ Scene Search

During still picture playback, press and hold the **SCENE SEARCH** (–) or (+) button to watch a reverse or forward picture playback.

Release the **SCENE SEARCH** button to resume normal still picture playback.

Notes

- The sound is muted during playback modes other than normal playback.
- During picture search operations, noise bars (horizontal white lines) or vibration will appear in the picture.
- If still picture playback continues for more than 5 minutes, the unit is switched to stop mode to prevent the tape from being damaged.
- This unit can playback tapes recorded in the LP (long play) mode.
  Playback quality of the tapes recorded in the LP mode will be inferior to that of the tapes recorded in the SP mode.

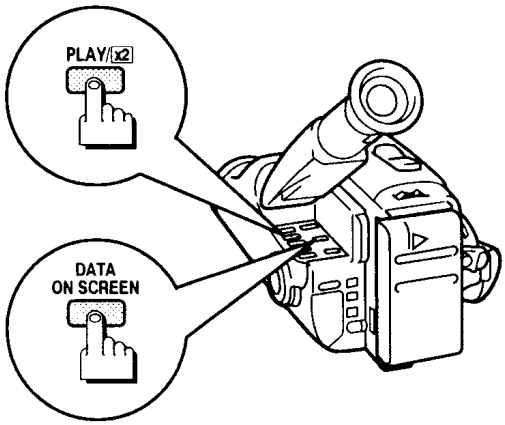
■ Frame Advance (Remote control only)

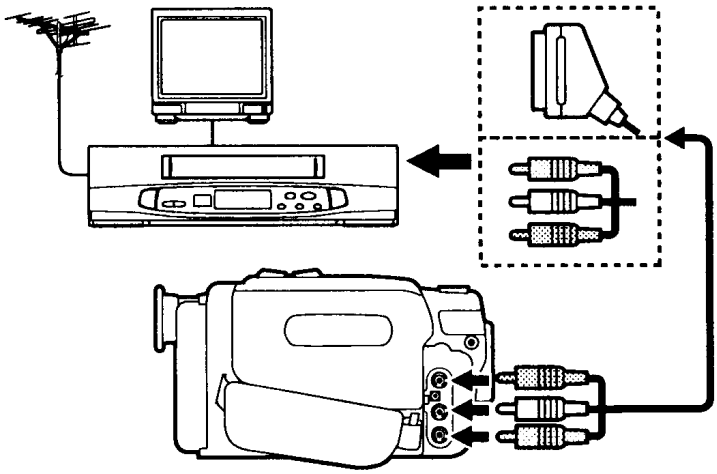
During still picture playback, press the **F.ADV** button to advance the picture one frame at a time. Press the **PLAY/▯2** button again to resume playback.

■ Slow Motion (Remote control only)

During playback or still picture playback, press the **SLOW** button to start slow motion playback. Press the **PLAY/▯2** button to resume playback, or press the **STILL** button to resume still picture playback.

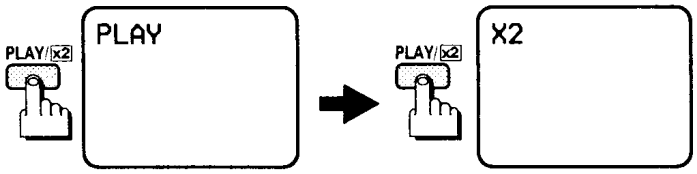
If noise bars are visible during slow motion playback, press the **SCENE SEARCH** (+) or (–) button repeatedly until corrected.





■ 2-time-speed playback

During playback, press the **PLAY/X2** button for 2-time-speed playback. During 2-time-speed playback, press the **PLAY/X2** button for normal playback.



Note

During 2-time-speed playback the sound is muted.

■ On-screen display

When the camcorder is connected to a TV receiver, the indications appearing in the viewfinder can be displayed on the TV screen by pressing the **DATA ON SCREEN** button. Pressing this button again will cancel the on-screen display.

Note

If the on-screen display is activated during tape copy, it will be recorded on the tape along with the picture and sound.

■ Tape copy

By connecting the camcorder to a VCR, you can copy the recorded tape in your camcorder to a tape that can be played back on your VCR.

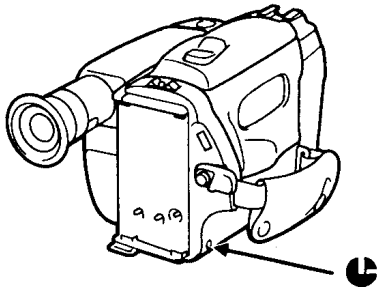
For details, please refer to your VCR instruction manual.

Note

Please refer to the accessories listing for the cable and adaptor used for the connections. Accessories not listed in the accessories listing must be bought separately.

■ LANC terminal

The symbol ⏾ identifies the LANC (Local Application Control Bus System) terminal. If you are using an edit controller or a computer for special editing functions, the external equipment is connected to the LANC terminal to precisely control all the tape transport functions of your camcorder. Please refer to the concerned equipment instruction manual for detailed operation.



Maintenance

■ Video head maintenance

When the camcorder has been used for a long time, the sound and picture playback quality deteriorate (as illustrated). If this occurs, the video heads should be cleaned (dry-type cleaning cassettes only).

If the playback quality is poor, even after cleaning the video heads, they might need to be replaced. For detailed information and assistance, please consult your dealer.

Note

Be very careful when using commercially available video head-cleaning products, as some might not be effective or they may damage the video heads.

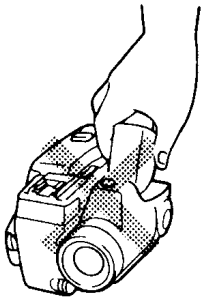
Inspection at 1000-hour intervals

For continued trouble free operation and beautiful pictures, it is recommended that the unit be inspected (including cleaning, lubrication and replacement of worn parts as necessary), every 1000 hours of use (approximately). For detailed information and assistance, please consult your dealer.

■ Use the grip belt to carry the camcorder

Holding it as shown in the illustration below might damage the camcorder or some of its components.

Remove the cassette tape when the unit is not being used.



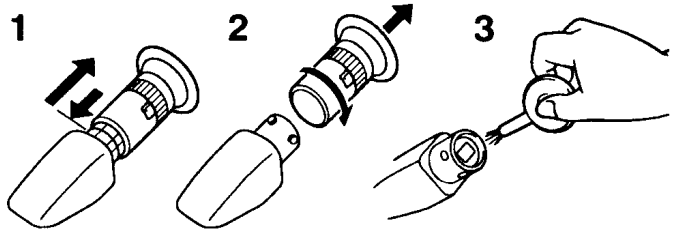
■ Cleaning the viewfinder

1 Fully pull out the eye-piece, then push it back slightly.

2 Turn it towards the left (in the direction of the arrow, as illustrated), then remove it.

3 Use an air blower (sold separately) to remove any dust on the viewfinder.

Reassemble in the reverse order of disassembly.



■ Using the camcorder abroad

To watch playback on a TV, you will need to connect the camcorder to a TV that is equipped with audio/video terminals and conforms to the PAL television system.

Main countries using the PAL standard:

Australia, Austria, Belgium, Britain, China, Denmark, Germany, Holland, Hong Kong, Italy, Kuwait, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand

Main countries using the SECAM standard:

Bulgaria, France, Hungary, Iran, Iraq, Luxembourg, Monaco, Poland, CIS

Main countries using the NTSC standard:

Canada, Japan, Korea, Mexico, the Philippines, Taiwan, U.S.A.

Specifications

Television system	PAL, CCIR
Video recording system	Rotating 2-head, helical-scan system
Audio recording system	Rotating head, FM stereo system
Cassette type	8 mm video cassette tape
Tape speed	Approx. 20.051 mm/sec. SP mode Approx. 10.058 mm/sec. LP mode (Playback only)
Maximum recording time	90 minutes (P5-90 cassette) SP mode
Fast forward/Rewind time	Approx. 6.5 minutes (P5-90 cassette)
Image sensor	CCD solid-state type (320,000 pixels)
Viewfinder	0.6 inch electronic viewfinder (black and white)
Lens	10x power zoom F1.6 (f=4.5 to 45 mm)
Filter diameter	37 mm
Focus	Fuzzy logic auto focus
White balance	Fuzzy logic auto white balance
Iris	Fuzzy logic auto iris
Minimum subject illumination	4 lux (Low Light mode)
Subject illumination range	4 to 100,000 lux
Recommended subject illumination	300 lux or more
Power supply	6 V: battery pack 6.5 V: AC adaptor/charger
Power consumption	5.7 W during camera recording
Operating temperature range	0°C to 40°C (32°F to 104°F)
Storage temperature range	–20°C to 60°C (–4°F to 140°F)
Dimensions (W x H x D)	Approx. 119 x 111 x 203 mm
Weight	Approx. 770 g (excluding the battery pack and tape)
Microphone	Electret condenser type
Video output terminal	Video output 1 Vp-p, 75 ohms unbalanced, negative sync
Audio output terminal	Audio output –7 dBs, 2.2 kohms or less

The manufacturer reserves the right to modify product designs and specifications without notice and without incurring any obligation.

Preset mode	Shutter speed	Auto focus range
	1/120 sec.	1 cm to ∞
AUTO	1/50 sec.	1 cm to ∞
	1/50 sec. to 1/250 sec.	2.5 m to ∞ centre frame area only
	1/50 sec.	1 cm to ∞
	1/50 sec.	1 cm to ∞
	1/250 sec. to 1/10,000 sec.	1 cm to ∞
	1/50 sec.	1 cm to 2 m

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